A&J MICRO DRIVE

User's Manual for the MODEL 2000 STRINGY FLOPPY

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INTRODUCTION

WHAT IS A MICROWAFER

A MicroWafer is a small mass storage cartridge containing up to 85k bytes of storage. Its rigid plastic case is rugged and may be carried in a shirt pocket, dropped, or left on a desktop without fear of damage.

A sliding cover protects the magnetic media from abrasion and dirt. It automatically retracts upon insertion into the drive. Critical data may be protected from being overwritten by removing a write protect tab on the side.

There is one label on the top which may be written upon. Another label on the front is visible when the wafer is in the drive.

WHAT IS A STRINGY FLOPPY

The Stringy Floppy is a mass storage peripheral which plugs into the expansion port of the Timex 2068 and which contains electronics and mechanics to run the MicroWafer.

The unit is a completely self contained system needing no additional cables or power supplies. No modifications to the computer are required.

A light on the front indicates when the motor is running in the drive. A second light on the front indicates when the drive is writing to the MicroWafer.

WHAT IS SOS

SOS is short for Stringy Operating System. It is an EPROM program which is in the Stringy Floppy interface and controls all stringy floppy functions.

SOS provides the proper codes to allow communication between the Stringy Floppy and Timex 2068 through the expansion port. SOS will allow data transfer at a rate of 10 times that of the cassette.

SOS provides the same file commands available using the standard audio cassette recorder, i.e., load, save, merge and verify. Additionally all the variations on these commands are available as well. You may load, save, merge and verify programs and variables, numeric arrays, character array $'s, machine code programs, screens and others.

HOW DOES SOS WORK

SOS contains a section which patches into the audio cassette routines. A small change to the file name is all that is required.

Once programs are loaded into the computer from the keyboard or the audio cassette, you may then save, load, merge and verify with the Stringy Floppy. SOS in no way affects the audio cassette which remains fully functional.

WHAT IS A FILE

The Stringy Floppy is used to read and write files on a MicroWafer.

A file is data somewhat like a file folder in a filing cabinet. Each file has a name which is used to find the file when the data is to be retrieved.

Data in a file may be anything. It can be a computer program such as a game, or it may be a word processor file, or a spreadsheet.

HOW MANY FILES ARE ALLOWED

Up to 9 files may be stored on a MicroWafer. The total amount or data which may be stored depends upon the storage capacity of the MicroWafer and the length of each file. MicroWafer's from 12K to 85K bytes are available.

HOW ARE FILES STORED

Files are stored on the MicroWafer, one after another. The file name is stored along with file data ending with end of file mark.

When SOS is instructed to find a file, it searches through the files until it finds the correct one. Then it reads in the data.

When a new file is written out, SOS writes it after finding the end of file mark of the file in front of it. The format routine writes an end of file mark 0 on the MicroWafer.

Chapter 1: GETTING STARTED

Installation of your Stringy Floppy

Required Equipment

The Stringy Floppy interface plugs directly into the expansion port in the rear of the Timex 2068. The connector will fit only one way so you cannot plug it in backwards.

The Stringy Floppys take their power from the computer. The amount of power available limits the number of drives which may be attached. No more than two drives should be attached and that is the limit of the interface.

SET UP PROCEDURE

Hooking up the Stringy Floppy is easily accomplished by plugging the 64 pin connector on the interface into the expansion port in the back of the Timex 2068. Make absolutely sure power is off to your computer when installing or removing the Stringy Floppy or any other peripheral from the Timex 2068.

Plugging in the first drive and second drive into the interface is very easy. The drive has a 16 conductor cable 18 inches long and has a connector on the end. This connector plugs into the connectors marked DR0 and DR1 on the rear of the interface. The connectors are polarized and can plug in only one way.

If you have only one drive, plug it into DR0. If you have a second drive, it plugs into DR1. All drive select functions are provided by the interface and no modifications are required to the drive.

The drive cable will plug into the interface and run to the right of the interface. The cable length was chosen to allow for flexibility as to where you can place drives in reference to your other equipment.

GETTING SOS STARTED

You must do nothing! That's right, nothing. If you have the interface and drives installed properly, all you must do is turn on your computer. The operating system is automatically placed into the computer's operating system.

Chapter 2: WORKING THE STRINGY FLOPPY

SOS

SOS uses a variation inside the file name to distinguish between commands meant for the Stringy Floppy and those meant for audio cassette. This variation takes the form of an "@" symbol. The @ symbol is always the first character inside file name for any operation involving the Stringy Floppy.

EXAMPLE:

LOAD"@FILE" loads a file

FORMATING A MICROWAFER

Every MicroWafer must first be formated before any files may be saved. The format routine writes an end of file 0 mark on the wafer. The following must be done to format a wafer:

SAVE"@1,+"

After entering the following command the drive will go until it finds the end of tape/beginning of tape splice. Once finding the splice the write electronics will write the end of file mark 0 and then write a pattern back to the end of tape/beginning of tape mark. You may now write programs on your MicroWafer II.

This command will erase any information you have on your MicroWafer, so be careful.

SAVING A FILE

SOS will allow the user a large number of choices when saving programs. Remember before you can save your first file on a MicroWafer it must be formatted.

The general syntax for saving a file is:

SAVE "@#,f"...

SAVE tells the computer that you want to save a file. @ tells SOS that the Stringy Floppy is to be used and not the audio cassette. The # sign is filled in with a number from 1 to 9. Files must be saved in order. Files can be of any length or type. f is the filename. The filename must be no more than 7 characters. The filename is followed by different parameters to do a variety of saves. Below is a table of different save commands available to the Stringy Floppy through SOS.

SAVE COMMAND TABLE

SAVE"@#,f"	Saves the program and variables.
SAVE"@#,f" LINE	Saves the program and variables so that if they are loaded there is an automatic jump in Line.
SAVE"@#,f" DATA var ()	Saves the numeric array.
SAVE"@#,f" DATA var $()	Saves the character array $.
SAVE"@#,f" CODE M,N	Saves N bytes at starting address M.
SAVE"@#,f" SCREENS$	Saves screen information. The same would result with save"@#,f" code 16384,6912.

LOADING A FILE

As in saving programs, SOS allows for great flexibility when loading programs. As in all commands meant for the Stringy Floppy, the symbol "@" is used to distinguish between the Stringy and audio cassette.

Different from saving programs, you need not put in the file number or the comma. A simple @ and the filename inside the filename quotes is all that is required. A sample command would be:

LOAD"@f"...

Load is the standard command used when loading a file into memory. The "s close in the filename. The @ symbol is again the symbol used to distinguish between the Stringy Floppy and audio cassette. Then comes the 7 characters or less filename. The filename is followed by different parameters to do a variety of loads.

Below is a table of different load commands available to Stringy Floppy through SOS:

LOAD COMMAND TABLE

LOAD"@f"	Loads program and variables.
LOAD"@f" DATA var ()	Loads a numeric array.
LOAD"@f" DATA var $()	Loads character array$.
LOAD"@f" CODE M,N	Loads at most N bytes, starting at address M.
LOAD"@f" CODE M	Loads bytes starting at address M.
LOAD"@f" CODE	Loads bytes back to the address they were saved from.
LOAD"@f" SCREEN$	Loads the file to the screen. Same as Load"@f" Code 16384,6912.

LOADING PROGRAMS WITH MERGE

The MERGE command can be used instead of LOAD if you wish to combine two programs. Where LOAD clears all previous program data out of the computer before loading in the new one, MERGE leaves the old one in while loading the new. However, if any of the same line numbers appear in both programs, the new lines will take precedence over-and erase- the old ones. This means that to MERGE programs requires careful planning. (If you save a program using LINE, and load it with MERGE rather than LOAD, it might not jump to the appropriate line number and start automatically.)

VERIFYING A SAVE

The verify command is used to check on whether the Stringy Floppy has stored the data you saved correctly. When verifying a file it should be done immediately after a save. The syntax for verifying a file is as follows:

VERIFY"@f"...

Note the file # and comma are removed. Other than changing the SAVE to VERIFY the above removals are the only changes in verifying a file you have saved.

CHAPTER 3 HELPFUL HINTS

CARE OF YOUR MICROWAFERS

Because of the tough construction of your MicroWafer, very little has to be done to care for them. A few points should be kept in mind:

1) DON'T leave MicroWafers in very hot places, such as a hot dashboard, or the top of a stove.

2) DON'T leave MicroWafers in a very humid place, such as a hot shower.

3) DON'T operate the Stringy Floppy upside-down or on its side.

4) DON'T remove a MicroWafer while the red light is on.

INSERTION, REMOVAL, AND LABELING OF MICROWAFERS

Putting the MicroWafer into your Stringy floppy is easy. The cartridge only goes in one way; the large straight arrow molded into the top of the MicroWafer shows which way it goes in.

Your MicroWafers provide a location for labeling of each MicroWafer. It is a good idea to label every MicroWafer with its contents, so you don't lose track of your files and programs.

WRITE PROTECTION OF MICROWAFERS

You may want to protect information on a wafer from ever being erased.

To write protect a wafer, knock out the write protect tab. If the knockout is not present, the drive will not be able to write over the data on the wafer.

WAFER ACCESS TIME VS CAPACITY

The time to access a file depends upon the length of the wafer and the distance of the file from the beginning.

To optimize performance, use as short a wafer as possible for the application.

STORAGE CAPACITY AND AVERAGE ACCESS TIME

TAPE LENGTHS (FEET)	CAPACITY (1 FILE)	AVG. ACCESS TIME: (seconds)
10	14K	12
20	28K	24
35	49K	42
50	70K	60
62	85K	75

STRINGY FLOPPY ERROR CODES

CODE **MEANING**

ø **OK**
Successful completion of operation.

8 **END OF FILE**
You have run out of tape. Use another MicroWafer or write over existing files to gain more storage area.

D **BREAK - CONT REPEATS**
Break was pressed.

F **INVALID FILE NAME**
Save with name empty, longer than 7 characters, no file number, or no comma.

O **INVALID STREAM**
Your MicroWafer is write protected.

R **TAPE LOADING ERROR**
A file on tape was found but for some reason could not be read in, or would not verify.